

Notice of Allowability

Application No.

09/648,271

Examiner

Denise Tran

Applicant(s)

ESTAKHRI ET AL.

Art Unit

2185

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment after final filed 7/31/06 and the telecommunication on 8/17/06.
2. ☒ The allowed claim(s) is/are 1-13, 15-18, 21-24, 27-49 and 55-59.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 7/31/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 8/17/06
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Haverstock on 8/17/06.

2. The information disclosure statement filed 7/31/06 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

3. The application has been amended as follows: see the following Claim Amendments, pages 2-16.

PATENT
Attorney Docket No.: LEXA-00301

CLAIM AMENDMENTS

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims regarding the present application. In reading this, text added by the amendment is underlined, and canceled text appears in ~~strike~~through.

1. (Original) A method of storing digital data within a Flash Memory System comprising the steps:
 - a. mapping a non-volatile memory medium within the Flash Memory System into a plurality of independently addressable, independently programmable and independently erasable memory blocks including a plurality of Dedicated Data Blocks and a plurality of Dedicated Overhead Blocks comprising a first Dedicated Overhead Block and a second Dedicated Overhead Block;
 - b. mapping each of the plurality of Dedicated Overhead Blocks into a plurality of pages, wherein the plurality of pages within each Dedicated Overhead Block are addressed according to an identical set of consecutive page addresses;
 - c. mapping each of the plurality of Overhead Pages into a plurality of Overhead Segments, wherein the plurality of Overhead Segments within each page are addressed according to an identical set of consecutive segment addresses, each Overhead Segment comprising a plurality of registers including a Physical Address Register and a flag field; and
 - d. correlating the plurality of consecutive Overhead Page addresses within the first Dedicated Overhead Block to a respective plurality of consecutive Virtual Logical Block Addresses including a first Logical Block Address defining a first Logical Block of User Data correlated to a first Overhead Page address defining a first Overhead Page.
2. (Currently amended) The method according to Claim 1 further comprising the steps:
 - a. receiving from a host a first set of User Data defined according to the first Virtual Logical Block Address;
 - b. storing the first set of User Data in a first Dedicated Data Block defined according to a first Virtual Physical Block Address;

PATENT
Attorney Docket No.: LEXA-00301

- 6 c. identifying a first available segment within the first page, an available Overhead
7 Segment comprising an Overhead Segment that is unused, non-defective, and not
8 obsolete, and wherein the first available segment is defined by a lowest segment
9 address of available segments comprising the first page; and
10 d. storing an address of the first Dedicated Data Block in the Physical Address
11 Register of the first available Overhead Segment.

- 1 3. (Original) The method according to claim 1 wherein each of the Overhead Segments
2 further comprises an error correction code.

- 1 4. (Original) The method according to Claim 1 further comprising the step of consolidating
2 all current Overhead Segments within the first Dedicated Overhead Block into a second
3 Dedicated Overhead Block, a current Overhead Segment comprising an Overhead
4 Segment that is used, non-defective, and not obsolete.

- 1 5. (Previously Presented) The method according to Claim 4 wherein the step of
2 consolidating the first Dedicated Overhead Block into a second Dedicated Overhead
3 Block further comprises the steps:
4 a. moving data stored within a current Overhead Segment within the first Overhead
5 Page of the first Dedicated Overhead Block to a replacement Overhead Segment
6 within a second Overhead Page within the second Dedicated Overhead Block, the
7 replacement Overhead Segment being a lowest addressable segment within the
8 second Overhead Page, the second Overhead Page being defined by an identical
9 page address as an address defining the first Overhead Page; and
10 b. erasing the first Dedicated Overhead Block.

- 1 6. (Original) The method according to Claim 1 wherein the step of correlating the plurality
2 of consecutive page addresses to a respective plurality of consecutive Virtual Logical
3 Block Addresses is performed through a RAM space manager.

- 1 7. (Original) The method according to claim 6 further comprising the steps:
2 a. storing a logical address within a non-volatile correlation register within the Flash
3 Memory System; and

PATENT
Attorney Docket No.: LEXA-00301

4 b. loading a physical address into a correlation register of the RAM space manager
5 upon power up.

1 8. (Original) The method according to Claim 2 wherein the flag field within each Overhead
2 Segment further includes a used flag, an obsolete flag, and a defective flag.

1 9. (Original) The method according to Claim 8 wherein the step of identifying the first
2 available segment further comprises the step of examining select flags within select
3 Overhead Segments within the first page.

1 10. (Original) The method according to Claim 9 wherein the step of storing an address of the
2 first Dedicated Data Block in the Physical Address Register of the first available
3 Overhead Segment further comprises the step of setting the used flag within the first
4 available Overhead Segment to a second position, thereby indicating that overhead data
5 has been stored therein.

1 11. (Original) The method according to Claim 10 further wherein the step of storing an
2 address of the first Dedicated Data Block in the Physical Address Register of the first
3 available Overhead Segment further comprises the step of setting the obsolete flag in a
4 last used Overhead Segment to a second position, thereby indicating the last used
5 segment is obsolete; wherein the address of the first available segment consecutively
6 follows an address defining the last used Overhead Segment within the first page.

1 12. (Original) The method according to claim 3 wherein the step of consolidation is preceded
2 by a step of writing overhead data into a highest addressable overhead segment of a page
3 within the first dedicated overhead block.

1 13. (Original) The method according to claim 1 further comprising the steps:
2 a. marking as defective a dedicated overhead block; and
3 b. re-designating a dedicated data block as a dedicated overhead block.

1 14. (Canceled)

PATENT
Attorney Docket No.: LEXA-00301

1 15. (Currently amended) ~~The method according to Claim 14 further~~ A method of data storage
2 within a Flash Memory comprising the steps:

3 a. mapping a non-volatile memory medium within the Flash Memory System into a
4 plurality of independently addressable, independently programmable and
5 independently erasable memory blocks including a plurality of Dedicated Data
6 Blocks and a plurality of Dedicated Overhead Blocks comprising a first Dedicated
7 Overhead Block and a second Dedicated Overhead Block;

8 b. mapping each of the plurality of Dedicated Overhead Blocks into a plurality of
9 consecutively addressed Overhead Segments, wherein the plurality of segments
10 within each Dedicated Overhead Block are addressed according to an identical set
11 of distinct segment addresses, each segment comprising a Physical Address
12 Register and a Flag Field;

13 c. correlating the first Dedicated Overhead Block to a first group of Virtual Logical
14 Block Addresses including a first Virtual Logical Block Address;

15 [[a]]d. receiving from a host a first set of User Data defined according to a first Virtual
16 Logical Block Address;

17 [[b]]e. identifying a first available Overhead Segment within the first Dedicated
18 Overhead Block, the first available Overhead Segment comprising a lowest
19 addressable available Overhead Segment within the first Dedicated Overhead
20 Block, an available Overhead Segment comprising an Overhead Segment that is
21 unused, non-defective, and not obsolete;

22 [[c]]f. storing the first set of User Data in a first Dedicated Data Block defined according
23 to a first Virtual Physical Block Address; and

24 [[d]]g. storing an address of the first Dedicated Data Block in the Physical Address
25 Register of the first available Overhead Segment[[.]].

wherein user data and overhead data are segregated in separate memory blocks, such that the user
data are stored only in the plurality of dedicated data blocks and the overhead data are separately
stored only in the plurality of dedicated overhead blocks.

1 16. (Original) The method according to Claim 15 further comprising the step of consolidating
2 all current Overhead Segments within the first Dedicated Overhead Block into
3 consecutive Overhead Segments within the second Dedicated Overhead Block, a current

PATENT
Attorney Docket No.: LEXA-00301

4 Overhead Segment comprising an Overhead Segment that is used, non-defective, and not
5 obsolete.

1 17. (Original) The method according to Claim 16 wherein the step of consolidating the first
2 Dedicated Overhead Block into a second Dedicated Overhead Block comprises the steps:
3 a. moving data stored within a first current Overhead Segment in the first Dedicated
4 Overhead Block into a lowest addressable available Overhead Segment within the
5 second Dedicated Overhead Block, and
6 b. erasing the first Dedicated Overhead Block.

1 18. (Original) The method according to claim 17 wherein the step of consolidation is
2 preceded by a step of writing overhead data into a last addressable segment of the first
3 dedicated overhead block.

1 19. (Canceled)

1 20. (Canceled)

1 21. (Original) The method according to Claim 15 wherein the flag field within each
2 Overhead Segment further includes a used flag, an obsolete flag, and a defective flag.

1 22. (Original) The method according to Claim 15 wherein the step of identifying the first
2 available Overhead Segment further comprises the step of examining select flags within
3 select Overhead Segments within the first Dedicated Overhead Block.

1 23. (Original) The method according to Claim 21 further comprising the step of setting the
2 used flag within the next available Overhead Segment to a second position, thereby
3 indicating that overhead data has been stored in the next available segment.

1 24. (Original) The method according to Claim 17 wherein the step of moving data stored in a
2 first current overhead segment into a first available overhead segment further comprises
3 the steps:

PATENT
Attorney Docket No.: LEXA-00301

- 4 a. examining select flags within select Overhead Segments comprising the first
5 Dedicated Overhead Block, and
6 b. examining select flags within select Overhead Segments comprising the second
7 Dedicated Overhead Block.

1 25. (Canceled)

1 26. (Canceled)

1 27. (Previously Presented) A method of storing digital data within a Flash Memory System
2 comprising the steps:

- 3 a. mapping a non-volatile memory medium within the Flash Memory System into a
4 plurality of separately addressable, separately programmable and separately
5 erasable memory blocks comprising a plurality of Dedicated Data Blocks and a
6 plurality of Dedicated Overhead Blocks, the plurality of Dedicated Overhead
7 Blocks including a first Dedicated Overhead Block and a second Dedicated
8 Overhead Block;
9 b. mapping each of the plurality of Dedicated Overhead Blocks into a fixed overhead
10 field and a random overhead field, wherein the fixed overhead field of each of the
11 plurality of Dedicated Overhead Blocks comprises a plurality of consecutively
12 addressable Overhead Segments defined according to an identical sequence of
13 Overhead Segment addresses, and a random overhead field comprises a plurality of
14 consecutively addressable Overhead Segments, each Overhead Segment
15 comprising a plurality of registers including a Physical Address Register; and
16 c. correlating the plurality of consecutively addressable Overhead Segment within the
17 fixed overhead field of the first Dedicated Overhead Block to a first group of
18 consecutively addressable Virtual Logical Block Addresses including a first fixed
19 segment correlated to a first Virtual Logical Block Address.

1 28. (Original) The method according to Claim 27 further comprising the steps:

- 2 a. marking as defective a dedicated Overhead Block; and
3 b. re-designating a Dedicated Data Block as a Dedicated Overhead Block.

PATENT
Attorney Docket No.: LEXA-00301

1 29. (Previously Presented) The method according to Claim 27 wherein the step of correlating
2 the plurality of consecutively addressable Overhead Segments within the fixed overhead
3 field of the Dedicated Overhead Block to a first group of consecutively addressable
4 Virtual Logical Block Addresses is performed through a RAM Space Manager.

1 30. (Original) The method according to Claim 29 further comprising the steps:
2 a. storing a logical address within a non-volatile correlation register within the Flash
3 Memory System; and
4 b. loading a physical address into a correlation register of the RAM Space Manager
5 upon power up, thereby correlating a logical address with a physical address in the
6 RAM Space Manager.

1 31. (Previously Presented) The method according to Claim 27 further comprising the steps:
2 a. receiving from a host a first set of User Data defined according to the first Virtual
3 Logical Block Address;
4 b. storing the first set of User Data in a first Dedicated Data Block defined according
5 to a first Virtual Physical Block Address; and
6 c. storing overhead data corresponding to the first Virtual Logical Block Address in
7 the first Overhead Segment within the first Dedicated Overhead Block.

1 32. (Original) The method according to Claim 31 wherein the step of storing overhead data in
2 the first Overhead Segment comprises the steps:
3 a. identifying the first fixed segment within the fixed overhead field of the first
4 Dedicated Overhead Block;
5 b. determining if the first fixed segment is available;
6 c. storing the overhead data supporting the first Virtual Logical Block Address in the
7 first fixed segment when the first fixed segment is available; and
8 d. storing the overhead data corresponding to the first Virtual Logical Block Address
9 in a first random Overhead Segment when the first fixed segment is not available,
10 the first random segment comprising a lowest addressable unused and non-
11 defective Overhead Segment within the random overhead field of the first
12 Dedicated Overhead Block.

PATENT
Attorney Docket No.: LEXA-00301

- 1 33. (Original) The method according to Claim 31 wherein the step of determining that the first
2 fixed segment is available comprises the step of examining flags within the first fixed
3 segment.
- 1 34. (Original) The method according to claim 31 further comprising the steps:
2 a. mapping the random overhead field of each Dedicated Overhead Block into a
3 plurality of pages, each page comprising a plurality of segments;
4 b. designating a lowest addressable segment in each page within the random overhead
5 field as a Status Segment; and
6 c. mapping each status segment into a plurality of registers to function as an update
7 map.
- 1 35. (Original) The method according to Claim 31 wherein the step of storing overhead data
2 corresponding to the first Virtual Logical Block Address in the first random Overhead
3 Segment further comprises the steps:
4 a. locating a last previous segment used for storing overhead data supporting the first
5 Virtual Logical Block Address;
6 b. setting an obsolete-flag corresponding to the last previous segment to a second
7 value, indicating that overhead data within the last previous segment is now
8 obsolete; and
9 c. setting an used-flag in the first random Overhead Segment to a second value,
10 indicating that overhead data is now stored in the first random Overhead Segment.
- 1 36. (Original) The method according to Claim 34 wherein the update map contains one
2 register corresponding to each segment within the fixed overhead field of the first
3 Dedicated Overhead Block.
- 1 37. (Original) The method according to Claim 27 further comprising the step of consolidating
2 current overhead segments within the first Dedicated Overhead Block into the second
3 Dedicated Overhead Block when the first Dedicated Overhead Block becomes full.
- 1 38. (Previously Presented) The method according to claim 37 wherein the step of
2 consolidating current overhead segments comprises the steps:

PATENT
Attorney Docket No.: LEXA-00301

- 3 a. correlating a second Overhead Segment within the fixed overhead field of the
4 second Dedicated Overhead Block to the first Virtual Logical Block Address; and
5 b. copying data within the first overhead segment into the second overhead segment.

1 39. (Original) A method of storing digital data within a Flash Memory System comprising the
2 steps:

- 3 a. mapping a non-volatile memory medium within the Flash Memory System into a
4 plurality of separately addressable, separately programmable and separately
5 erasable memory blocks comprising a plurality of Dedicated Data Blocks and a
6 plurality of Dedicated Overhead Blocks, the plurality of Dedicated Overhead
7 Blocks including a first Dedicated Overhead Block and a second Dedicated
8 Overhead Block;
9 b. mapping each of the plurality of Dedicated Overhead Blocks into plurality of
10 Super Overhead Fields, including a first Super Overhead Field within the first
11 Dedicated Overhead Block;
12 c. mapping each of the plurality of Super Overhead Fields into an identical set of
13 consecutively addressable Overhead Segments, each of the plurality of Overhead
14 Segments comprising a plurality of registers including a Physical Address
15 Register;
16 d. correlating a first Super Virtual Logical Block Address defined by consecutive
17 Virtual Logical Block Addresses to the first Dedicated Overhead Block; and
18 e. correlating a first Virtual Logical Block Address within the first Super Virtual
19 Logical Block Address to a first Overhead Segment Address within the first
20 Dedicated Overhead Block.

1 40. (Original) The method according to Claim 39 further comprising the steps:

- 2 a. marking as defective a dedicated Overhead Block; and
3 b. re-designating a Dedicated Data Block as a Dedicated Overhead Block.

1 41. (Original) The method according to Claim 39 wherein the step of correlating a first Super
2 Virtual Logical Block Address to the first Dedicated Overhead Block is performed
3 through a RAM Space Manager.

PATENT
Attorney Docket No.: LEXA-00301

- 1 42. (Original) The method according to Claim 41 further comprising the steps:
2 a. storing a logical address within a non-volatile correlation register within the Flash
3 Memory System; and
4 b. loading a physical address into a correlation register of the RAM Space Manager
5 upon power up, thereby correlating a logical address with a physical address in the
6 RAM Space Manager.
- 1 43. (Original) The method according to Claim 42 wherein the non-volatile correlation register
2 is within an extension field of a Super Overhead Field of a Dedicated Overhead Block.
- 1 44. (Previously Presented) The method according to Claim 39 further comprising the steps:
2 a. receiving from a host a first set of User Data defined according to the first Virtual
3 Logical Block Address;
4 b. storing the first set of User Data in a first Dedicated Data Block defined according
5 to a first Virtual Physical Block Address;
6 c. storing overhead data corresponding to the first Virtual Logical Block Address in a
7 first Overhead Segment defined by the first Overhead Segment Address within the
8 first Super Overhead Field.
- 1 45. (Original) The method according to Claim 44 wherein the step of storing overhead data is
2 preceded by the step of incrementing from a previous Super Overhead Field within the
3 first Dedicated Overhead Block to the first Super Overhead Field.
- 1 46. (Original) The method according to Claim 44 wherein the step of storing overhead data
2 further comprises the step of setting an used-flag within the first Overhead Segment to a
3 second position indicating that overhead data is stored within the first Overhead Segment.
- 1 47. (Original) The method according to Claim 46 wherein the step of storing overhead data
2 further comprises the steps:
3 a. locating a last previous segment within the first Dedicated Overhead Block used
4 for storing overhead data supporting the first Virtual Logical Block Address; and
5 b. setting an obsolete-flag within the last previous segment to a second value,
6 indicating that overhead data within the last previous segment is now obsolete.

PATENT
Attorney Docket No.: LEXA-00301

- 1 48. (Original) The method according to Claim 39 further comprising the step of consolidating
2 current overhead segments within the first Dedicated Overhead Block into the second
3 Dedicated Overhead Block when overhead data has been stored in a final Super Overhead
4 Field within the first Dedicated Overhead Block.
- 1 49. (Original) The method according to claim 48 wherein the step of consolidating current
2 overhead segments comprises the steps:
3 a. identifying a first current Overhead Segment defined according to the first
4 Overhead Segment Address within the first Dedicated Overhead Block ; and
5 b. copying data within the first current Overhead Segment into a second overhead
6 segment defined according to the first Overhead Segment Address within the first
7 Super Overhead Field of the second Dedicated Overhead Block.
- 1 50. (Canceled)
- 1 51. (Canceled)
- 1 52. (Canceled)
- 1 53. (Canceled)
- 1 54. (Canceled)
- 1 55. (Currently Amended) ~~The Flash memory Device according to Claim 54~~ A flash memory
2 device for storing User Data comprising a plurality of separate, independently addressable,
3 independently programmable and independently erasable non-volatile Physical Memory
4 Blocks distinguishably defined by a plurality of Physical Block Addresses including:
5 a. a plurality of dedicated data Blocks for storing User Data only; and
6 b. a plurality of consecutively addressed Dedicated Overhead Blocks for storing
7 Overhead Data only including a first Dedicated Overhead Block and a second
8 Dedicated Overhead Block.

PATENT
Attorney Docket No.: LEXA-00301

wherein the plurality of dedicated data blocks is segregated from the plurality of dedicated overhead blocks, wherein each Dedicated Overhead Block is identically comprised of a plurality of separately addressable Overhead Pages, each block following an identical sequence of page addresses, wherein each Overhead Page is comprised of a plurality of independently addressable and independently programmable segments, including a plurality of Overhead Segments, wherein the plurality of independent Overhead Segments are used for storing Overhead Data, each Overhead Segment supporting one Virtual Logical Block of User Data, each Overhead Segment comprising:

- a. physical Address Register for storing a Physical Address for locating
corresponding User Data; and
- b. a flag field,

wherein a first group of Virtual Logical Block Addresses including a first VLBA are assigned to the first Dedicated Overhead Block, such that overhead data generated in support of the first VLBA will be stored in an Overhead Segment within the first Dedicated Overhead Block, wherein sequential VLBA's within the first group of VLBA's are respectively correlated to sequentially addressed Overhead Page Addresses within the first Dedicated Overhead Block, including a first Virtual Logical Block Address correlated to a first Overhead Page within the first Dedicated Overhead Block, such that Overhead Data supporting the first Virtual Logical Block Address will be stored in an Overhead Segment within the first Overhead Page.

56. (Currently Amended) The A Flash Memory Device according to Claim 54 for storing User Data comprising a plurality of separate, independently addressable, independently programmable and independently erasable non-volatile Physical Memory Blocks distinguishably defined by a plurality of Physical Block Addresses including:

- a. a plurality of dedicated data Blocks for storing User Data only; and
- b. a plurality of consecutively addressed Dedicated Overhead Blocks for storing Overhead Data only including a first Dedicated Overhead Block and a second Dedicated Overhead Block,

wherein the plurality of dedicated data blocks is segregated from the plurality of dedicated overhead blocks, wherein each Dedicated Overhead Block is identically comprised of a plurality of separately addressable Overhead Pages, each block following an identical sequence of page addresses, wherein each Overhead Page is comprised of a plurality of

PATENT
Attorney Docket No.: LEXA-00301

independently addressable and independently programmable segments, including a plurality of Overhead Segments, wherein the plurality of independent Overhead Segments are used for storing Overhead Data, each Overhead Segment supporting one Virtual Logical Block of User Data, each Overhead Segment comprising:

- a. physical Address Register for storing a Physical Address for locating
- corresponding User Data; and
- b. a flag field,

wherein a first group of Virtual Logical Block Addresses including a first VLBA are assigned to the first Dedicated Overhead Block, such that overhead data generated in support of the first VLBA will be stored in an Overhead Segment within the first Dedicated Overhead Block, wherein each of the plurality of Dedicated Overhead Blocks further comprise of a fixed Overhead Field and a Random Overhead Field, the fixed Overhead Field being comprised of a plurality of consecutively addressed Overhead Pages, and the Random Overhead Field being comprised of a plurality of consecutively addressed Overhead Pages.

57. (Original) The Flash Memory Device according to Claim 56 wherein consecutively addressed segments comprising the consecutively addressable Overhead Pages within the Fixed Overhead Field of the first Dedicated Overhead Block are respectively correlated to sequentially addressed Virtual Logical Block Addresses.

58. (Currently Amended) The flash memory device according to Claim 57 wherein the plurality of consecutively addressed segments comprising the consecutively addressed Overhead Pages within a first Overhead Page within the Random Overhead Field of the First Dedicated Overhead Block comprise a Status Segment and a plurality of Overhead Segments, the Status Segment defined according to a lowest segment address among the plurality of segments within the first Overhead Page.

59. (Original) ~~The~~ A Flash Memory Device according to ~~Claim 54~~ for storing User Data comprising a plurality of separate, independently addressable, independently programmable and independently erasable non-volatile Physical Memory Blocks distinguishably defined by a plurality of Physical Block Addresses including:

PATENT
Attorney Docket No.: LEXA-00301

5 a. a plurality of dedicated data Blocks for storing User Data only; and

6 b. a plurality of consecutively addressed Dedicated Overhead Blocks for storing
7 Overhead Data only including a first Dedicated Overhead Block and a second
8 Dedicated Overhead Block.

9 wherein the plurality of dedicated data blocks is segregated from the plurality of dedicated
10 overhead blocks, wherein each Dedicated Overhead Block is identically comprised of a
11 plurality of separately addressable Overhead Pages, each block following an identical
12 sequence of page addresses, wherein each Overhead Page is comprised of a plurality of
13 independently addressable and independently programmable segments, including a
14 plurality of Overhead Segments, wherein the plurality of independent Overhead Segments
15 are used for storing Overhead Data, each Overhead Segment supporting one Virtual
16 Logical Block of User Data, each Overhead Segment comprising:

17 a. physical Address Register for storing a Physical Address for locating
18 corresponding User Data; and

19 b. a flag field.

20 wherein a first group of Virtual Logical Block Addresses including a first VLBA are
21 assigned to the first Dedicated Overhead Block, such that overhead data generated in
22 support of the first VLBA will be stored in an Overhead Segment within the first
23 Dedicated Overhead Block, wherein each Dedicated Overhead Block is further comprised
24 of a plurality of Super Overhead Fields including a first Super Overhead Field, a Super
25 Overhead Field comprised of a whole number of pages, each Super Overhead Field within
26 the first Dedicated Overhead Block comprised of an identical number of pages, wherein
27 consecutive Overhead Segments within first Super Overhead Region are respectively
28 assigned to consecutively addressed Virtual Logical Block Addresses which comprise a
29 first SuperBlock.

1 60. (Canceled)

1 61. (Canceled)

1 62. (Canceled)

1 63. (Canceled)

Attorney Docket No.: PATENT
LEXA-00301

1 64. (Canceled)

1 65. (Canceled)

1 66. (Canceled)

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise Tran whose telephone number is (571) 272-4189. The examiner can normally be reached on Monday, Thursday, and an alternated Friday from 8:45 a.m. to 5: 15p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shah Sanjiv, can be reached on 571-272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Denise Tran

8/17/06